Ministry of Environment and Energy

PIBS 3239E (FOD)

FOR YOUR information

AUGUST 1994

Clean water regulations for the industrial minerals and metal casting sectors

The Ontario Ministry of Environment and Energy has implemented two regulations to protect the environment from pollutants discharged directly to water courses from the industrial minerals and metal casting sectors.

As a result of these regulations, pollutant discharges from both sectors will be substantially reduced. Because of reduced quantities of pollutants, aquatic life should suffer less reproductive abnormalities and other deformities.

The regulations will generate reductions in total suspended solids, zinc and less toxicity in effluent which in turn will limit the degradation of river and lake bottom sediments. This will make water more hospitable to fish and other aquatic life and increase their chances of survival and healthy reproduction.

Implementing the regulations will help Ontario reach the goals of the Remedial Action Plan program in areas which include the Bay of Quinte, the Detroit River and Metro Toronto. Other benefits include reduced discharges from industrial minerals and metal casting plants into Lake Ontario, the Thames River and the Speed River.

The regulations are part of Ontario's commitment to help achieve the objectives of the Canada-United States Great Lakes Water Quality Agreement.

GOAL OF MISA

Clean water regulations are being developed under the Municipal/Industrial Strategy for Abatement (MISA) program.

The goal of MISA is the virtual elimination of persistent toxic substances from effluents discharged into Ontario's waterways. MISA was introduced in 1986 to identify and reduce the pollutants discharged from industrial and municipal sources into Ontario's rivers and lakes.

The first phase of the program -- monitoring the effluent from 300 major industrial direct dischargers -- was completed in August 1991. In September 1991, the ministry published the Issue Resolution Final Report which defined concepts that were crucial for the development and implementation of the clean water regulations. At the same time, the ministry introduced a new direction for the MISA program which included:

- the identification of pollution prevention as the preferred approach to achieving the virtual elimination of persistent toxic substances
- the establishment of effluent limits for a list of sector-specific parameter
- the establishment of a ban or phase-out list for specific persistent toxic substances
- the requirement that final effluent cannot kill fish or water fleas as measured by standardized tests

The ministry has now embarked upon the second phase -- the effluent limits regulation of industrial sector dischargers -- to reduce the amount of conventional and toxic contaminants being discharged.

To date, clean water regulations have been issued for the pulp and paper, petroleum refining, metal mining, industrial minerals and metal casting sectors. Draft regulations have been released for the inorganic and organic chemicals sectors.

Ontario

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PIBS 3239E

PROFILE OF THE INDUSTRIAL MINERALS SECTOR

The industrial minerals sector is made up of companies that mine and process non-metallic minerals and structural materials. Plants in this sector produce a variety of materials including portland cement, lime, gypsum products, graphite, talc, roofing granules, magnesium, nepheline syenite and calcite.

At the beginning of the monitoring phase of MISA, 116 plants were considered for regulation under this sector. Five plants have been excluded from regulation because they do not discharge any effluent. In addition, 85 pits and quarries which were included in the original list, will not fall under this regulation. The results of monitoring indicated that pits and quarries do not discharge any priority pollutants and that their effluent do not kill fish or water fleas. The ministry is examining alternative ways of controlling the operations of these plants.

INDUSTRIAL MINERALS SUB-SECTORS

The 26 plants to be regulated in the industrial minerals sector are divided into the following sub-sectors:

Cement sub-sector

PLANT	LOCATION	RECEIVING WATER
St. Lawrence Cement Corp.	Mississauga	Lake Ontario
Lafarge Canada Inc.	Bath	Lake Ontario
Lafarge Canada Inc.	Woodstock	Thames River
Essroc Canada Inc.	Picton	Lake Ontario
St. Mary's Cement Corp.	Bowmanville	Lake Ontario
St. Mary's Cement Corp.	St. Mary's	Thames River

Chemical lime/magnesium sub-sector

PLANT	LOCATION	RECEIVING WATER
Global Stone	Ingersoll	Thames River
Beachvilime Ltd. (Guelph Dolime Ltd.)	Guelph	Speed River
Beachvilime Ltd. (East Plant)	Beachville	Thames River
Redland Quarries Inc.	Dundas	Hamilton
Beachvilime Ltd. (West Plant)	Beachville	Thames River
Timminco Ltd.	Haley	McLaren's Creek

Graphite/gypsum/nepheline/syenite/basalt/talc/ quartzite sub-sector

PLANT	LOCATION	RECEIVING WATER
Applied Carbon Technology Inc.	Kearney	Georgian Bay
Westroc Industries Ltd.	Drumbo	Grand River
CGC Inc.	Hagersville	Grand River
Domtar Inc.	Caledonia	Grand River
Unimin Canada Inc.	Nephton	Stoney Lake
Unimin Canada Ltd.	Blue Mountain	Kashabog Lake

PLANT	LOCATION	RECEIVING WATER
3 M Canada	Havelock	Plato Creek Georgian Bay
Canada Talc Ltd.	Madoc	Moira Lake
Luzenac Inc.	Timmins	Mattagami River
Unimin Canada Ltd.	Badgeley Island	North Channel

Salt sub-sector

PLANT	LOCATION	RECEIVING WATER
Sifto Canada Inc. Goderich Mine	Goderich	Lake Huron
Sifto Canada Inc. Evaporator Plant	Goderich	Lake Huron
The Canadian Salt Company Ltd. Ojibway mine	Windsor	Detroit River
The Canadian Salt Company Ltd. Evaporator Plant	Windsor	Detroit River

ESTABLISHING THE DISCHARGE LIMITS

The clean water regulation for the industrial minerals sector establishes legal limits for pollutants discharged by the 26 plants. The effluent limits are based on the results of a 12-month monitoring program and an evaluation of the best available technology (BAT) for the sector.

The ministry defines BAT as a combination of demonstrated treatment technologies and in-plant controls. To determine BAT, a consultant was hired to conduct a world-wide search for modern wastewater treatment practices.

In anticipation of the MISA regulations, some Ontario companies have already installed best available technologies.

Under the regulation, the affected companies are free to choose how they intend to meet the limits. For example, rather than installing pollution prevention controls. A description of the available technology is contained in the report The Best Available Pollution Control Technology Industrial Minerals Sector.

The regulation consists of limits on suspended solids and pH (a measure of acidity and alkalinity). The effluents must be non-toxic to fish and water fleas (Daphnia magna). Total suspended solids must be limited to a monthly average of 25 milligrams per litre. The limits are stated in terms of concentration.

OTHER JURISDICTIONS

Ontario's effluent limits for total suspended solids for the industrial minerals sector is comparable to those of other jurisdictions, as indicated in the table below. Limits in Ontario, however, are mandatory as opposed to most jurisdictions which have guidelines.

JURISDICTION	TSS GUIDELINES (milligrams per litre)
Ontario	25
Quebec	25
New Brunswick	25
Nova Scotia	25
Newfoundland	30 (above background)
Saskatchewan	25 - 50
Alberta	35
British Columbia	25 - 75
United States	30 (Gypsum)
France	30
Germany	100
United Kingdom	250

PROFILE OF THE METAL CASTING SECTOR

The metal casting sector consists of foundries and die casters. Metal castings are produced by cooling molten metal into desired shapes (for example, engine parts, industrial equipment, aircraft parts).

In Ontario, in 1992, there were approximately 160 active metal casting plants which employed 5,000 people.

Currently, of the 160 metal casting companies only seven discharge directly into waterways. Two of the seven will be regulated: Haley Industries, located near Pembroke which manufactures aluminum and magnesium castings for the aerospace industry and the Windsor Casting Plant of Ford, which manufactures iron castings for the automotive industry.

One plant, General Motors, St. Catharines announced that it will close in 1994. The remaining four plants discharge cooling water which, because it does not mix with process wastewater, should not be contaminated. These four plants will be subject to toxicity limits and required to monitor their cooling water on a regular basis.

The Richmond Die Casting Ltd. plant which was listed in the draft regulation released for public consultation in October 1993, has since changed its location and is no longer a direct discharger.

The four metal casting plants which will be required to monitor their cooling water on a weekly basis are:

Canada Alloy Castings Ltd, Kitchener
Chrysler Canada Ltd., Etobicoke
Kubota Metal Corp., Orillia
Western Foundry Co. Ltd., Wingham

The effluent from the four plants must not kill fish and water fleas. Each of the four plants will monitor for DOC and TSS, with the Chrysler and Western Foundry plants also monitoring for phenolics and fluroide.

Should any of these four companies find significant levels of contaminants in their cooling water, the ministry will require the plants to investigate the source(s) and reasons for the contamination and to take remedial measures.

ESTABLISHING THE DISCHARGE LIMITS

Limits for the two plants in the sector are based on the results of a 12-month monitoring program and an evaluation of the best available technology (BAT) for the sector.

The ministry defines BAT as a combination of demonstrated treatment technologies, process changes and in-plant controls. To determine BAT, a consultant was hired to conduct a world-wide search of applicable treatment practices.

Regulated companies are free to choose how they intend to meet the limits. For example, rather than installing end-of-pipe treatment, companies may choose to implement pollution prevention controls. A description of available technology is contained in the report "Best Available Technology for Effluent Treatment in the Metal Casting Sector".

The clean water regulation for the metal casting sector will require Ford and Haley Industries to reduce the amounts of a number of specific pollutants being discharged to the Detroit River and McLaren Creek, (a tributary of the Ottawa River) respectively. It will also require that all effluents do not kill fish or water fleas and that the pH of all effluents is in the range 6.0 - 9.5.

Reducing the amounts of pollutants being discharged to the Detroit River from the Ford plant will help meet the objectives of the Detroit River Remedial Action Plan.

POLLUTANTS BEING REGULATED

FORD	HALEY
Dissolved Organic Carbon (DOC)	Biochemical Oxygen Demand (BOD)
Total Suspended Solids (TSS)	TSS
Aluminum	Aluminum
Zinc	Zinc
Phenolics	Phenolics
Total Cyanide	Total Cyanide Chromium Copper Silver Ammonia/ Ammonium

OTHER JURISDICTIONS

The limits in the regulation are comparable to or surpass limits in force in Germany, Japan and Taiwan.

HOW THE REGULATIONS WERE DEVELOPED

The regulations for the industrial minerals and metal casting sectors were developed through the participation of industry and Environment Canada in joint technical committees. A representative of the MISA Advisory Committee, a body of independent scientific and environmental experts appointed by the minister, attended the joint technical committee meetings as an observer.

A 60-day public consultation period was held in October, 1993.

PENALTIES FOR VIOLATIONS

Corporations not complying with the clean water regulations are subject to a maximum fine of $50,000 per day for a first conviction and $100,000 per day for subsequent convictions.

WHERE TO GET MORE INFORMATION

To receive more information on the clean water regulations for the industrial minerals and metal casting sector, please call the Ontario Ministry of Environment and Energy at 1-800-565-4923.